2-27-81

Holden Town Dump
Emergency Action Plan
Holden, Massachusetts

EPA Region I
Oil & Hazardous Materials Section
February, 1981

Holden Town Dump

Emergency Action Plan

Background

The Holden Town Dump is located on Wachusett River Street 2,000 feet east of the intersection of Wachusett and Harris Street in Holden, Massachusetts. The site was formerly a sand and gravel operation and is approximately fifteen acres in size. The sanitary landfill has been in operation since 1971 and was approximately two-thirds full as of 1980. There is no evidence that suggests illegal dumping of hazardous waste at this location. A 200' x 600' pond which abuts the landfill to the west is clear and free of surface sheen, although some debris is scattered along its eastern bank. Continuous streams of small gas bubbles have been observed rising from the sandy substrate along the east bank of the pond but there are no stains or other evidence of leachate breakout in this area.

Forest surrounds the landfill on the north, east, and south. Winding through this forested land is a network of unimproved roads which access the Quinapoxet River to Wachusett River Street (See Figure 1). The forest is predominantly second growth deciduous with some evergreen.

The Interstate Route 190 right-of-way passes to within 1,000 feet of the landfill on the east. The right-of-way is clear-cut up to Wachusett River Street and surveyed but not clear-cut from Wachusett River Street northward.

The Quinapoxet River flows in a general northeasterly direction within 1,000 feet of the northern boundary of the landfill. From the location of the landfill, the Quinapoxet flows one and one-quarter miles before it empties into the Wachusett Reservoir. The Wachusett is part of the MDC drinking water supply system for Boston.

A leachate stream emerges from a slope approximately 500 feet east of the landfill. As the stream turns north towards the Quinapoxet, it changes from a sluggish system of pools to a well defined and swift running stream under the powerline right-of-way. The deep rust colored leachate drops over a 50 foot rocky embankment into the Quinapoxet. The flow of this main leachate stream is estimated at between 5 and 10 gallons per minute. There are three lesser streams trickling into the Quinapoxet upstream of the main leachate stream. None of these streams exhibit a flow of greater than 1 or 2 gallons per minute.

These leachate streams caused EPA Region I, OHM Section, to become involved in the site through a State of Massachusetts request in 1980 to determine the site's applicability to Section 311 of the CWA.

The initial EPA investigation of the Holden Town Dump in May, 1980, revealed the presence of four hazardous substances (i.e. benzene, ethylbenzene, toluene, and trichloroethylene). In coordination with the State of Massachusetts, an investigation/mitigation strategy was developed with the State assuming the role of lead agency (Attachment 1). Federal funds were used to construct two leachate control structures and the State of Massachusetts financed the installation of six groundwater investigation wells to aid in determining the exact source and extent of the underground contamination. This phase was completed in November, 1980.

EPA analysis of the groundwater from these wells in January, 1981 is shown in Table 1. The results of the analysis indicate the highest concentration of contaminants to be on the north side of the landfill (Sample HTDW01), while on the south side, there is no evidence of contamination (Sample HTDW07).

Based on the available information, it could be concluded that the landfill is probably the source of the contaminated leachate. This, however, has not been proven beyond a reasonable doubt, mainly because of the limited use of observation wells. With this drawback in mind, the following emergency action program is outlined below:

1) Hire a hydrogeological consultant to determine the groundwater flow pattern in the area, to define the extent of the contamination, to verify that the town dump is (or is not) the source, and to present an effective long range plan to intercept and treat the contaminated groundwater. This study would probably involve the installation of 6-10 additional groundwater observation wells which could be periodically sampled, 1-2 recovery well systems with each system consisting of 1-3 recovery wells, as necessary, to aggressively remove the contaminated groundwater from the aquifer, and a suitable treatment system to remove the hazardous materials from the pumped groundwater. The treatment system effluent should be resubmitted to the groundwater table in a way that would provide a flushing action advantageous to the operation of the recovery system.

2) Monitor and maintain the existing leachate control structures until the consultant's proposals can be implemented (2-5 months).

3) Implement the contractor's proposals for the collection/treatment system.

4) Periodically (i.e. monthly, quarterly) monitor strategic observation wells and the leachate to track the system's effectiveness. Treated effluent should be more frequently monitored (i.e. weekly) to ensure an adequate margin of safety.

Estimated Cost of Emergency Actions at Holden Town Dump

1)	Engineering study for aquifer tests	$ 45,000.00
2)	Groundwater observation wells (ten wells)	$ 25,000.00
3)	Recovery wells (six wells and associated hardware)	$ 30,000.00
4)	Activated carbon treatment system, installation	$ 500,000.00
	Operation and maintenance	$ 250,000.00/yr.
5)	Well monitoring (10 well samples, priority pollutant scan)	$ 10,000.00/yr.
6)	River monitoring (six samples, priority pollutant full scan)	$ 6,000.00/yr.
	TOTAL COST/1ST YEAR	$ 866,000.00

Holden Dump Wellwater Analyses

January 28, 1981

	BLANK	HTDW01	HTDW02	HTDW03	HTDW04	HTDW05	HTDW06	HTDW07	HTDL01
Chloroethane	-	T	-	-	-	T	-	-	-
1,1 dichloroethylene	-	11	-	-	-	-	-	-	24
1,1 dichloroethane	-	159	-	-	5	12	9	-	480
trans-1,2 dichloroethylene	-	34	42	40	15	16	108	-	75
1,1,1 trichloroethane	-	298	-	-	-	-	15	-	330
benzene	-	12	12	10	8	20	7	-	5
toluene	-	114	85	102	4	120	17	-	115
ethyl benzene	-	18	17	13	12	35	2	-	2
butanol	-	-	-	-	-	-	-	-	T
methyl ethyl ketone	-	-	-	-	-	-	-	-	T
1,2 butadiene	-	T	-	-	-	-	-	-	-
tetrahydrofuran	-	T	T	T	T	T	T	-	-
dipropylene glycol methyl ether	-	T	T	T	T	T	T	-	-
methyl isobutyl ketone	-	T	T	T	-	T	T	-	T
dichlorofluoromethane	-	-	-	-	T	T	T	-	T
acetone	-	-	-	-	-	-	-	-	T

T = Trace

Values are in part per billion range

Table 1

September 8, 1980

Mr. William Marhoffer
Mass. Division of Water Pollution Control
110 Tremont Street
Boston, MA 02108

Dear Mr. Marhoffer:

As a result of recent telephone communications and meetings with DWPC, DEQE and local personnel regarding the pollution incident in Bolden, MA, it is our understanding that:

1) The State of Massachusetts is the lead agency regarding the investigation of the Bolden, MA, pollution source.

2) Six groundwater wells will be installed by the State of Massachusetts to determine or exclude the Town of Holden landfill as a source.

3) Sampling & sample analysis for the six wells will be accomplished by the State and its lab in Lawrence, MA. Should analytical support from EPA be required, please submit a request to: E.V. Fitzpatrick, Director, S&A Division, 60 Westview St., Lexington, MA 02173.

4) Upon defining the source of the pollution, the State will issue an order to the source for immediate abatement and mitigation.

5) EPA's Oil & Hazardous Materials Section will continue to monitor the situation and maintain their treatment boxes installed in the leachate plume.

Attachment 1

If any questions should arise, please refer them to me at (617) 861-6700 or 223-7265.

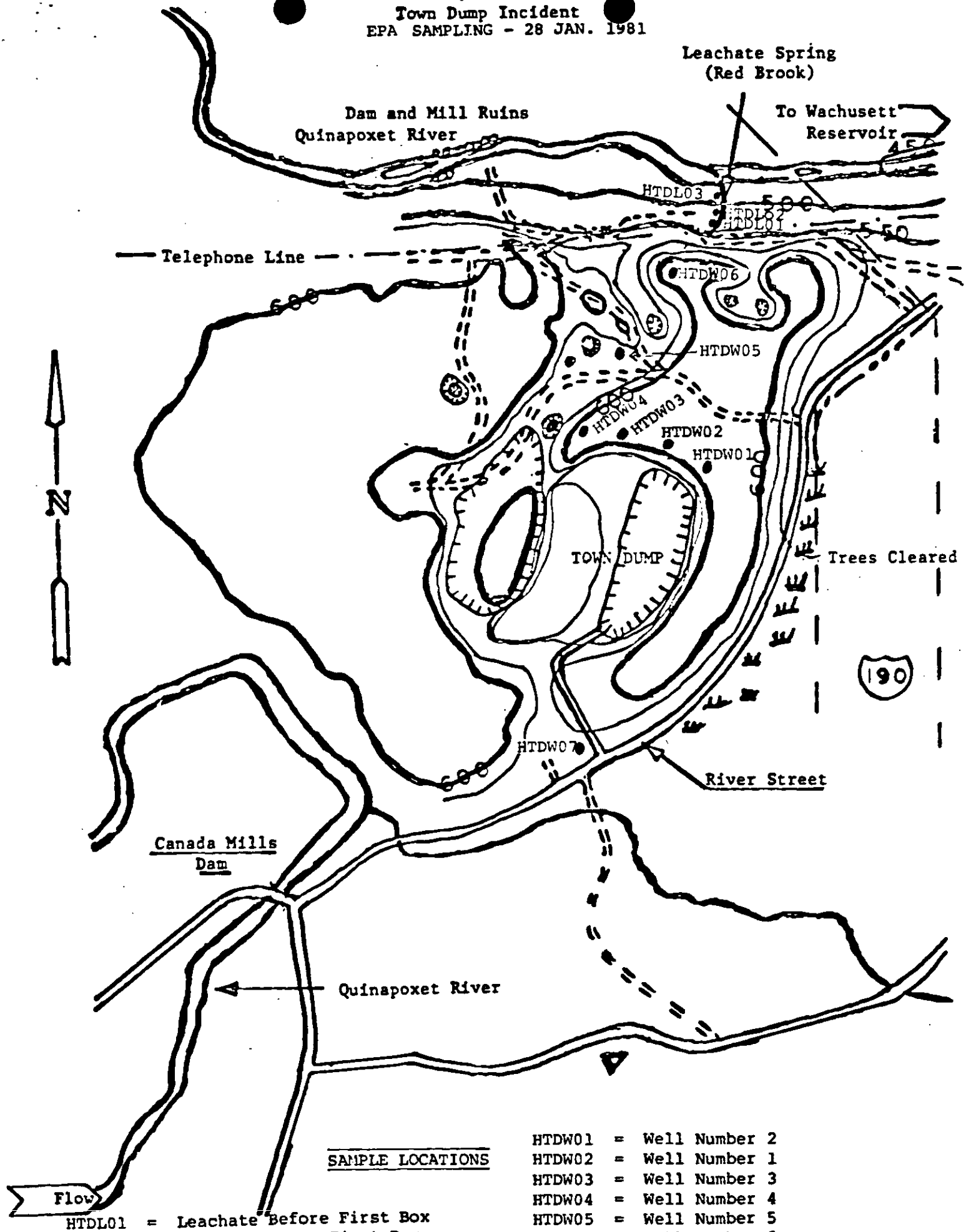
Sincerely yours,

Robert J. Ankstitus
Environmental Engineer

cc: Ed Benoit, DEQE, 75 Grove St., Worcester, MA 01605
Paul Anderson, DWPC, 209 New Boston St., Woburn, MA
Gil Joly, DEQE, 75 Grove St., Worcester, MA 01605
Al Berg, Town Engineer, Town Hall, Holden, MA 01520
Everett Maynard, EPA, EIS Section, JFK, Boston
O. Garald Guerrini, MDC, Clinton, MA 01510
Sue Sladek, EPA, Boston
Jerome Healey, EPA, Boston

Figure 1

Holden, Massachusetts
Town Dump Incident
EPA SAMPLING - 28 JAN. 1981



SAMPLE LOCATIONS

HTDL01 = Leachate Before First Box
HTDL02 = Leachate After First Box
HTDL03 = Leachate After Second Box

HTDW01 = Well Number 2
HTDW02 = Well Number 1
HTDW03 = Well Number 3
HTDW04 = Well Number 4
HTDW05 = Well Number 5
HTDW06 = Well Number 6
HTDW07 = Tap Water at Entrance to Dump

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 8, 1980

SUBJECT: Volatile Organic Analysis on Holden, MA

FROM: Richard Siscanaw RS acc
Chemist

TO: Edward L. Taylor ELT
Chief, Chemistry Section

Two samples were received on June 6, 1980, and analyzed on June 12, 1980 by the EPA procedure "Organics by Purge and Trap", method 624. Semi-quantitation was done using a single purged standard for the compounds on the priority pollutant and the hazardous substance lists.

Quality control included laboratory blanks and an internal standard of bromochloromethane, 2-bromo-1-chloropropane, and 1,4-dichlorobutane. The average recoveries for the samples were 77, 85, and 85%, respectively. No field blank was received.

The toluene levels are only an approximation. The laboratory is having a new roof installed and the adhesive contains toluene. The toluene levels in the samples were determined by subtracting corresponding blanks which were analyzed just before the samples.

Sample Number	70322	70324
Location	Leachate above Treatment System	Leachate below Second Treatment Box
Compounds	Concentrations (ppb)	
Dichlorofluoromethane	X	X
Acetone	X	X
Isopropyl Alcohol	X	X
1,1-Dichloroethylene	4	
Methyl Ethyl Ketone	X	X
1,1,1-Trichloroethane	500	200
trans-1,2-Dichloroethylene	20	10
1,1-Dichloroethane	10	30
Trichloroethylene	1	1
Benzene	1	1
Methyl Isobutyl Ketone	X	X
Tetrachloroethylene	1	1
Toluene	J20	J6
Ethyl Benzene	4	2
Xylenes	8	5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 7, 1980

SUBJECT: Purgeable Organic Analysis on Holden Dump Site Samples

FROM: Moira Lacaille, Richard Siscanaw, RS
William Andrade, Chemists WJA

TO: John Conlon, Chief
Oil & Hazardous Materials Section

THRU: Edward L. Taylor
Chief, Chemistry Section

Seven samples and one field blank from the Holden, MA dump site were received by the laboratory on May 2, 1980. The samples were analyzed for volatile compounds as per EPA procedure "Organics by Purge and Trap"method 624. Semi-quantitation was performed using a single purged standard. Quality control included a laboratory blank, field blank, and an internal standard of bromochloromethane, 2-bromo-1-chloropropane, and 1,4-dichlorobutane. The average recoveries for the samples were 120, 100, and 101% respectively.

The results are:

Sample No.	Location	Compounds	Approx. Conc. ppb
Field blank			Less than 1 ppb*
70259	H.T.D. just upstream of dam at aquaduct outlet		Less than 1 ppb
70282	H.T.D. Pond S.E. side		Less than 1 ppb
70285	H.T.D. West stream at Culvert upstream		Less than 1 ppb
70280	H.T.D. Upstream sample just below Canadian Mills Dam		Less than 1 ppb
70257	H.T.D. Pond next to highway		Less than 1 ppb

* Based on internal standards

Sample No.	Location	Compounds	Approx. Conc. ppb
70264	H.T.D. Confluence of drainage and Quixapoxet River	Acetone	
		Methyl Ethyl Ketone	
		Methyl Isobutyl Ketone	
		Isopropyl alcohol	
		1,1,1 Trichloroethane	1
70262	H.T.D. Gully of Red Brook near pole 51	1,1,1 Trichloroethane	400
		Trichloroethylene	1
		Benzene	1
		Toluene	10
		Ethyl Benzene	2
		Methyl Ethyl Ketone	
		Methyl Isobutyl Ketone	
		Tetrachloroethylene	
		1,1 Dichloroethylene	8
		1,1 Dichloroethane	24
		T, 1,2 Dichloroethylene	20
		Dichlorofluoromethane	

Worcester North Quadrangle 7½ minute Series
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